



**Exploring a meta-theoretical framework for dynamic assessment and intelligence**

**by**

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*From Dublin tenements and rented one-room housing; from second-rate citizens to beings making forays into meta-theory; two leaps have indeed been made! The second relying wholly on the first. I dedicate this thesis to George and Memory, my parents.*



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*I wonder whether the gentlemen who make a business and a living out of writing books, ever find their own selves getting in the way of their subjects, like me?* Gabriel Betteredge from *The Moonstone* by Wilkie Collins (1868)

## Summary

Dynamic assessment, as manner of alternative process-based assessment, is currently at a cross-roads chiefly characterised by, at times, vague conceptualisation of terminology, blurred demarcation as to its model and theory status and at times ill-defined fundamental philosophy. As a movement in modern psychological assessment within the broader field of intelligence, dynamic assessment does not present with a coherent unifying theory as such and due to its lack of clarity in a number of key areas its eventual disuse might well be the final outcome of this method and its unique history and methodology. In pursuit of this study's main goal, dynamic assessment models and theories are critically explored by means of a meta-theory largely inspired by the work K.B. Madsen, a Danish meta-theorist and pioneer in theoretical psychology. Madsen's meta-theory is attenuated in order to suit the nature and purposes of this study; so as to better analyse dynamic assessment within intelligence research and assessment.

In its primary aim, this study builds on a foundation of epistemological and ontological considerations within science in general, the social sciences and psychology in particular. In keeping with Madsen's method of meta-theory analysis, the author's predilections are stated at the outset in order to place the progression of analyses of the various models and theories within dynamic assessment. Dynamic assessment and intelligence are discussed and a brief digression into the history of Soviet psychology is offered as it is pertinent to the work of Lev Vygotsky and its subsequent influence within process-based assessment. Theory and model development within science and the social sciences are described from a philosophy-of-science vantage point. Psychological assessment's prime considerations are critically explored and the discussion highlights the role played by the philosophical aspects of mathematics and statistical foundations as leveraging measurement within assessment. Particular attention is paid to the perennial controversy surrounding null hypothesis significance testing and the possible future directions that can be explored by and within dynamic assessment which lends itself to approaches less restrictive than those offered by mainstream statistics.

The obvious and not so obvious aspects within the mathematical, statistical and measurement foundations are critically explored in terms of how best dynamic assessment can manoeuvre within the current mainstream psychological assessment system and how new models of item response theory suited to change-based assessment can be explored as possible manner of handling the gain score issue; itself a paradoxical state of affairs within classical and modern test theory. Dynamic assessment's past has in large part been dictated by mainstream considerations in the areas mentioned and in order to place itself on an alternative path these considerations are critically assessed in terms of dynamic assessment's future path. Dynamic assessment and its place within the broader intelligence assessment field is then investigated by means of the meta-theory developed. It is envisaged that the intuitive appeal of dynamic assessment will continue to garner support from practitioners across the globe, specifically those trained in countries outside the traditional stronghold of Western psychological theory. However, the position taken in this argument is that in order to ensure its survival it will need to make a decision in terms of its future progress: either to branch off from mainstream assessment altogether or to become fused within mainstream assessment. The "best of both worlds" scenario has obviously not worked out as it was originally hoped.

The study concludes with the meta-theoretical exploration of dynamic assessment within intelligence by utilising a small selection of current models. The application of the attenuated Madsenian framework seeks to explore, place and ascertain the nature of each model regarding the ontological and philosophical status of the approach; the nature of the hypothetical terminology, scientific hypotheses and hypothesis system utilised and lastly the nature of the abstract data, concrete data and prime considerations as implicit concerns within the varied approaches. An HQ score is calculated for each such model and is a partial indicator of the testability (verifiability or falsifiability) of the model in question. The models are thus couched in meta, hypothetical and data strata and can be positioned on a continuum of sorts according to which tentative claims can be made regarding the veracity of the approach behind each model.

The study concludes with two appendices; a meta-analysis which was conducted on South African research in the field of dynamic assessment (1961-2002) and which cumulated in a significant effect size evidencing an overall positive effect that dynamic assessment has had as an alternative intervention technique in comparison to conventional or static based assessment models. In order to encourage replication of this study, all details pertaining to the studies included for consideration in the meta-analyses are attached in section 2 of this appendix. Secondly, an informal content analysis was conducted on eleven responses to questionnaires that were originally delivered to one hundred dynamic assessment practitioners and researchers across the globe. The purpose of the questionnaire was to ascertain information on core issues within dynamic assessment, as these fundamental issues were considered as pivotal in the future of this approaches' eventual development or stagnation. The analysis concluded that dynamic assessment is indeed perceived to be at a crossroads of sorts and thus supported the initial hypothesis stated above.

It is hoped that this theoretical study will aid in aligning dynamic assessment in a manner such that its eventual place in psychological assessment will be solidly grounded, theoretically defensible and viable as alternative manner of assessment.



## Keywords

Dynamic assessment, intelligence, epistemology, ontology, Soviet psychology, Russian psychology, Vygotsky, philosophy of science, theory, model, framework, meta-theory, psychology, mathematics, statistics, null hypothesis significance testing, measurement theory, item response theory, classical test theory, quantification, meta-analysis, content analysis.

## Opsomming

Dinamiese evaluering, as 'n wyse van alternatiewe prosesgebaseerde evaluering, is huidiglik by 'n kruispad wat hoofsaaklik gekenmerk word deur vae beskrywing van terminologie, onduidelike grense ten opsigte van die stand van die model en teorie en soms ook sleg omskrewe grondbeginsels. Dinamiese evaluering, as 'n beweging binne die veld van sielkundige evaluering as deel van breër intelligensie, skiet te kort aan 'n samehangende verenigde teorie en as gevolg van swak gedefinieerde kernareas mag dit gebeur dat dinamiese evaluering, met sy geskiedenis en metodologie, in onbruik verval. Te einde die doel van hierdie studie te bereik, word dinamiese evalueringmodelle- en teorieë krities ondersoek deur gebruik te maak van meta-teorie na die voorbeeld van K. B. Madsen, 'n Deense meta-teoretikus en baanbreker in teoretiese sielkunde. Madsen se teorie is aangepas met die oog op die aard en doel van hierdie studie, naamlik om dinamiese evaluering, binne die veld van intelligensienavorsing en evaluering, beter te kan ontleed.

Met die hoofdoel in gedagte bou hierdie studie voort op die basis van epistemologiese en ontologiese beskouings binne die raamwerk van die Wetenskap en meer spesifiek, die Sosiale Wetenskap en sielkunde in besonder. Ten einde getrou te bly aan Madsen se metode van metateorie-analise word die outeur se voorkeure van meet af aan gestel sodat die vordering van ontleding van die verskillende modelle en teorieë binne dinamiese evaluering geplaas kan word. Dinamiese evaluering en intelligensie word bespreek, gevolg deur 'n kort uiteensetting van die geskiedenis van Sowjet sielkunde, die invloed daarvan op die werk van Lev Vygotsky asook die invloed van Vygotsky se werk op prosesgebaseerde evaluering. Teorie en model ontwikkeling in Wetenskap en Sosiale Wetenskap word beskryf vanuit 'n filosofie van wetenskap oogpunt. Die belangrikste beskouings van sielkundige evaluering word krities ondersoek. Die bespreking beklemtoon die rol wat die filosofiese aspekte van wiskundige en statistiese vertrekpunte speel en hoe dit meting in sielkundige evaluering beïnvloed. Spesifieke aandag word gegee aan die voordurende polemieë rondom nul hipotese beduidenis toetsing en moontlike toekomstige rigtings wat ondersoek kan word deur en in die veld van dinamiese evaluering wat minder beperkend as die hoofstroom statistiek is.

Die duidelike en die minder duidelike aspekte binne die wiskundige, statistiese en metings grondslae word krities ondersoek aan die hand van hoe dinamiese evaluering die beste binne die huidige hoofstroom sielkundige toetsing en meting metodes kan inpas asook hoe nuwe modelle van item-antwoord teorie geskik is vir veranderinggebaseerde evaluering ondersoek kan word as 'n moontlike wyse om die toeneems punt te hanteer; hierdie is opsigself 'n teenstrydige saak in gevestigte en moderne toetsteorie. Die verloop van dinamiese evaluering in die voorafgaande areas was grootliks voorgeskryf deur hoofstroom beskouinge wat in hierdie studie krities evalueer word met die doel om dinamiese evaluering op 'n alternatiewe pad in die toekoms te plaas. Dinamiese evaluering en die plek daarvan binne die groter veld van intelligensiemetings word dan ondersoek deur gebruik te maak van die ontwikkelde meta-teorie. Dit word verwag dat die intuïtiewe aanslag van dinamiese evaluering sal voortgaan om wêreldwyd steun te wen, veral in lande waar daar nie die tradisionele westerse beskouinge gehuldig word nie. Hoe dit ook al sy, die standpunt wat in hierdie studie gehuldig word is dat ten einde die voortbestaan van dinamiese evaluering te veseker, daar 'n besluit geneem sal moet word ten opsigte van die toekomstige verloop, hetsy enersyds 'n totale breuk met die hoofstroom toetsing en meting of andersyds, 'n totale samesmelting daarmee. Dit het duidelik geword dat 'die brood aan albei kante gebotter hê' opsie nie hier haalbaar was nie.

Die studie sluit af met 'n meta-teoretiese ondersoek van dinamiese evaluering in intelligensie deur gebruik te maak van 'n paar huidige modelle. Die aangepaste weergawe van Madsen se raamwerk het dit ten doel om die ontologiese en filosofiese aard van elke model te ondersoek, te plaas en vas te stel; die aard van die hipotetiese terminologie, wetenskaplike hipoteses en hipotese-stelsel in gebruik asook die aard van die abstrakte data, konkrete data en die belangrikste oorwegings as implisiete bekommernisse binne die verskillende benaderings. 'n HQ telling is bereken vir elke model en dien as 'n gedeeltelike aanwyser van die toetsbaarheid (bewysbaarheid en vervalsbaarheid) van die betrokke model. Die modelle word dus groepeer in meta, hipotetiese en data stratum en kan op 'n kontinuüm geplaas word waarvolgens tentatiewe eise gemaak kan word ten opsigte van die betroubaarheid van die benadering van elke model.

Die studie sluit verder af met twee aanhangsels; 'n meta-analise gedoen op Suid-Afrikaanse navorsing op die gebied van dinamiese evaluering (1961 - 2002) wat kulmineer het in 'n beduidende effek grootte wat aanduiding gee van die algemene positiewe effek wat dinamiese evaluering in vergelyking met konvensionele metingsmetodes gehad het. Om die herhaling van hierdie studie aan te moedig word alle besonderhede van die betrokke navorsing in die meta-analise aangeheg in afdeling twee van hierdie aanhangsel. Tweedens is 'n informele inhouds-analise uitgevoer deur vraelyste uit te stuur aan een honderd dinamiese evaluering praktisyns en navorsers wêreldwyd. Die doel van die vraelyste was om inligting te verkry wat handel oor die fundamentele sake rakende dinamiese evaluering aangesien dit 'n bepalende rol speel in of die oorlewing of die stagnasie van



dinamiese evaluering. Die gevolgtrekking van die analise het inderdaad bewys dat dinamiese evaluering by 'n kruispad staan en onderskryf dus die aanvanklike hipotese.

Daar word gehoop dat hierdie teoretiese studie sal bydra om dinamiese evaluering sy plek in sielkundige toetsing en meting te laat inneem op 'n goed gefundeerde, teoreties verdedigbare en lewensvatbare wyse as 'n alternatiewe vorm van evaluering.

#### Sleutelwoorde

Dinamiese evaluering, intelligensie, epistemologie, ontology, Sowjet sielkunde, Russiese sielkunde, Vygotsky, filosofie van die wetenskap, model, raamwerk, meta-teorie, sielkunde, wiskunde, statistiek, nul hipotese beduidenis toetsing, metingsteorie, item-antwoord teorie, gevestigte / klassieke toetsteorie, hoeveelheidsbepaling, meta-analise, inhoudanalise.



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